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Protecting Biological Diversity in Nepal

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Summary

Development of Nepal's Royal Chitwan National Park shows how protection of biological diversity can move from strict enforcement to a more effective approach that benefits both the environment and local people. Chitwan also demonstrates how USAID funds, imaginatively budgeted, can help bring about such change in the preservation of endangered species and the way protected areas are managed.

Harboring a rich variety of rare and endangered species, a large expanse of Nepal's Chitwan region southwest of Kathmandu in the country's lowland terai was made a national park in 1973. The action forced the relocation of thousands of people living within the newly demarcated park boundaries. Many more who lived on the periphery were denied access to the parkland and the resources it provided: roofing thatch, construction timber, fuelwood, and livestock forage.

The Nepalese army rigorously defended the park's boundaries, but frequent incursions led to an atmosphere of confrontation between park staff and local people. Once the government realized that its protection efforts were not working, it began redirecting its preservation strategy from excluding the park's neighboring communities to engaging their participation in protection and sustainable use of the park's biological resources.

Through a series of small but carefully targeted grants, USAID has advanced Nepal's efforts to develop participatory approaches to protection and conservation of biological diversity. In December 1993 USAID's Center for Development Information and Evaluation (CDIE) assessed the Agency's biodiversity protection initiatives in Nepal. The evaluators selected Chitwan for study because it is a good example of how enlightened policies can lead to significant improvements in preserving biodiversity.

The evaluators found that, though small in scale, USAID-supported activities have helped bring about significant change in official awareness and attitudes. That change has begun to be reflected in government conservation policies and programs.

USAID grants have helped restore habitat and stabilize wildlife populations in and around Chitwan. The Asian one-horned rhinoceros,

once nearly extinct, now numbers over 400 in the park and surrounding Parsa Wildlife Reserve. USAID grants have also helped local populations to assume a share of the responsibilities for park protection and to share in some of the benefits of sustainable park operations for example, tourism and some use of forest products.

USAID's initiatives in protecting biological diversity in Nepal have also encouraged additional funding from other donors for conservation and development projects in and around Chitwan and other protected areas.

Background

Nepal is a country of sweeping ecological diversity. From snowcapped peaks, the world's highest, to verdant subtropical lowlands, Nepal's varying terrain provides habitat to uncounted plant and animal species. According to one classification, 35 forest types alone occur in the country.

Although problems in species preservation in Nepal have been centuries in the making (research indicates a 200-year decline for the one-horned rhinoceros), only in recent decades have the problems become critical. By 1958, for example, all but 35 rhinos in what is now the Royal Chitwan National Park had fallen, mostly to poachers. In 1969 the tiger population stood at 25. Water buffalo and swamp deer had become extinct in the park. While protected tigers and rhinos are coming back, today many other plant and animal species, some indigenous to Nepal, are also in peril.

During the 1960s and 1970s, USAID spearheaded an effort to eradicate malaria and stimulate agricultural development of Chitwan subtropical region of Nepal. As settlers transformed the vast lowland forests into croplands, they also began to destroy much of the area's renowned biological treasures. In 1964, King Mahendra gave sanctuary status to 93,000 hectares of South Asian monsoon forest. That area in 1973 became Royal Chitwan National Park, the nation's first national park.

The National Parks and Wildlife Conservation Act of 1973 created laws to establish and manage national parks and protected areas (see Figure 1). The new park service at first established a strict protection policy that banned all human activity within the borders of newly demarcated parks. But such a policy could not handle a local population growing at 6 percent a year and requiring land, jobs, and food. Villagers, many of whom had been forcibly relocated, were banned from using the park, even though maintaining their livelihood depended on the forest for thatch, timber, fuelwood, fodder, livestock grazing, and other needs.

Denial of the park for local use led to conflicts between villagers and park authorities, which prompted the government to rethink its policy. It concluded that total exclusion did not further the park's conservation objectives. Change, the government decided, was in order.

As a first step, the government in 1976 opened Chitwan park to local residents for grass cutting a few weeks a year. Since then, the government has, among other measures, involved the local population in antipoaching activities and instituted a policy of returning a large percentage of visitor fees to local residents in the form of revenue transfers to village development organizations.

USAID's Assistance Approach

Though lacking an explicitly defined program objective for biodiversity, USAID has shown a longstanding concern with protecting Nepal's biological resources. USAID's strong in-house technical staff (which has included a specialist in biodiversity) has strengthened Nepal's habitat preservation efforts by disbursing small grants, encouraging networking and donor collaboration, and engaging Nepalese decision makers in policy dialogue over well-chosen issues on the management of biological resources. Since 1987 USAID has spent \$1.7 million to fund small grants aimed at helping protect Nepal's biological diversity.

National Conservation Strategy. The Government of Nepal, with the help of USAID and other international aid agencies and international environmental groups, such as the World Conservation Union (IUCN), has drawn up a specific National Conservation Strategy. (Note: The International Union for the Conservation of Nature changed its name to World Conservation Union but retained its original initials.) The National Conservation Strategy recognizes that preserving Nepal's biodiversity requires some low-impact uses of wildland resources. For example, provisions in the strategy for nature tourism and the collection of medicinal plants and other alternative nontimber resources help make local communities economically self-sustaining and boost the national economy as well.

Newer parks, such as Langtang and Makalu Barun, have incorporated National Conservation Strategy concerns for local interests into their design and management plans. As the oldest park and one subject to particularly aggressive threats from poachers, Chitwan has had the farthest to go.

Chitwan park authorities have also taken steps to move from strict policing against encroachment by local communities to an approach that promotes a partnership with local villagers in park protection. USAID has supported activities, such as the training of park rangers, to help make this adjustment. Today, a new course curriculum places greater emphasis on wildlife, protected areas, tourism, recreation management, and sociological analysis and public relations.

Nongovernmental organizations (NGOs). USAID has further influenced Nepalese government policy with an umbrella grant to the IUCN to support implementation of the National Conservation Strategy through local nongovernmental organizations. With the strategy integrated into the National Planning Commission and staffed by Nepalese experts, IUCN is able to play an important role in the national-level policy and planning process.

In this way USAID was able to help bring about passage of the buffer zone development and revenue-sharing legislation to steer Chitwan and other parks toward a balance between preservation and people's needs. The legislation returns 30 percent to 50 percent of park revenues to local communities for development and conservation activities. The legislation also provides for integrating parks into an overall regional development framework. The direct involvement of USAID staff and representatives of USAID-supported NGOs in policy discussions leading to these legislative changes and in training of park rangers is setting the stage for the adoption of a more participatory model.

Through a grant to the World Wildlife Fund, USAID provided for the establishment of a permanent Nepal Conservation, Research, and Training Center with international affiliations that works mainly in and around Chitwan. The center maintains a research support facility with a complement of accomplished technicians. So advanced are the technicians' skills that the parks department decided recently to use its own funds to send rangers and game scouts to the center for in-service training.

The World Wildlife Fund grant also helped develop an outreach program that supported local residents in establishing six tree plantations in the buffer area around the park. In all, the tree plantations cover about 172 hectares. Among other benefits, the plantations restore badly degraded land, provide a steady source of fodder, and promote local development through the sale of forest products. These National Training Center buffer zone activities are being expanded under the present USAID Biodiversity Conservation Network Buffer Zone Project.

The Kathmandu Environmental Education Project. A cultural and environmental information program, this project reaches about 90 tourists a week during peak season. It educates tourists through the Travel Information Center and training programs for trekking guides. Its main message: Trek with minimum impact. A coffee shop located within the Travelers Information Center in Kathmandu attracts visitors, hands out brochures, and encourages conversations between tourists and staff. The sale of such items as biodegradable soaps, recycled stationery, and T-shirts with the message Minimum Impact spreads the project message and provides additional operating money. The Kathmandu Environmental Education Project has established a reputation as one of Nepal's best sources of information for tourists.

The Environmental Camps for Conservation Awareness. This project seeks to convey environmental awareness by teaching children, who then return to teach their parents. The environmental camps teach young Nepalese responsible outdoor behavior, promote alternative energy sources, and encourage new research and development in energy conservation and farming.

Alternate energy for biodiversity protection. A USAID-supported alternate-energy project is introducing biogas plant technology to communities around Chitwan as a substitute for fuelwood from the

park's forests. Although limited in number, the installations are highly visible a cheap and effective way of publicizing the technology. Constraints to greater use of biogas include lack of awareness about biogas plants, high installation costs, lack of technical support from NGOs, and lack of interest of foreign donors. With support to the IUCN, USAID continues to address these limitations.

Scientific research. USAID-supported research has provided a scientific basis for reducing threats to certain endangered species. In one case, USAID-supported studies showed that concentrated populations of rhinoceroses face greater danger from epidemics and poaching than do dispersed populations. The finding led to relocating some of Chitwan's rhinos to Royal Bardia National Wildlife Reserve, to the west, to help preserve the species.

In another case, USAID is supporting research to establish a number of breeding pools for the endangered mugger crocodiles in Royal Chitwan National Park and to build tourism into the activity as a means of generating self-sustaining revenue from visitor fees. The program provides an example of how USAID funds for relevant ecological research can improve park management while developing a long-range plan to preserve an endangered species.

Biodiversity database. Conservation efforts depend on a systematic understanding of a country's flora and fauna and the diversity of habitats in which they are found. USAID is helping further this understanding by bringing together stakeholders to create a biodiversity database that establishes a scientific basis for targeting conservation efforts.

Success with these small USAID grant activities has encouraged more substantial funding of two larger participatory conservation and development projects. In the first, at Makalu Barun National Park and Conservation Area, USAID provided \$600,000 to pilot the development and field testing of an approach to integrate community conservation and development. That work will be implemented through other donor funds. The second involves a \$633,000 USAID grant to pursue environmentally suitable development in the buffer zone around Royal Chitwan National Park.

Findings

Program Impact

Royal Chitwan National Park, as a specific case in a national context, shows how USAID's overall support to encouraging a balance between conservation and community involvement can enhance protection of biological diversity. Evaluation findings reveal that this support has fostered a number of changes in practices by both government agencies and local villagers, and in the socioeconomic and biophysical conditions in and around the park.

Spontaneous rehabilitation of degraded buffer areas (especially for thatch grasses), enthusiastic local participation in controlling poaching, a willingness of villagers residing in areas of wildlife

protection to relocate these developments all serve as indicators that USAID-supported initiatives in biodiversity protection at Chitwan are making a difference. It now looks as if participatory management at Chitwan is approaching a takeoff point. The policy and legislative climate has improved, and the technical and administrative capacity of park staff and interested NGOs has grown.

Park management has begun to make local communities part of the conservation solution rather than part of the problem. Until recently, the Nepalese Army provided the only enforcement against poaching. That enforcement was becoming increasingly ineffective. In the early 1990s park management formed special antipoaching units. They consisted of park rangers, members of the military, and paid informants from villages. This integrated approach has proven highly effective. In the six months before the CDIE evaluation, the antipoaching units prevented at least 10 instances of poaching. The new approach has also helped bring about a change of attitude within the army. Leaders have begun to recognize that their relationship with the surrounding community is important to their success.

Similarly, park staff are making an effort to take into account the interests of communities around the park. After floods in 1993 devastated several villages, staff were given discretion to turn a blind eye from wood collecting and grazing in the park for those hardest hit. Although such connivance may not be workable in the long run, a number of villagers have expressed gratitude that their interests are being acknowledged.

Although ecological conditions have improved overall within the park, pressures from outside have intensified. They have increasingly isolated Chitwan as a forest island surrounded by largely deforested croplands. This process has increased the value of forest resources and the importance of controlled local access to those resources. Legally acquired benefits, principally through tourism and grass cutting, have significant socioeconomic impact on local residents and on the protected-areas program.

Tourism has increased park revenue and has had a generally positive impact. Nature tourism is the major contributor to park revenue, and visitors to the park have increased steadily (see Figure 2). During the 1992 1993 season, Royal Chitwan National Park received 58,000 visitors, who brought in about 4 million Nepalese rupees (\$800,000). Figure 3 shows the breakdown of this revenue.

Though tourists generally appear to respect the park and its wildlife, some tourist-related disturbances are visible. The heavy use of elephants by tourists and the trails made for nature walks have damaged the vegetation in several areas. Fodder collection for elephants has also left its mark. On occasion, wild animals have been harassed so that tourists might view them more easily. Insects (including butterflies and moths) are exploited by tourist collectors, and rare and endangered species have been affected. Such disturbances, however, are localized. Overall, the evaluators found protection of the park from tourist uses to be successful.

Many local people have benefited from tourism, although the effect has been concentrated in tourist centers and in certain segments of the population. About 1,000 people are employed by hotels, and some 500 more work as guides, laborers, ethnic dancers, restaurant employees, and shopkeepers. Further income is generated from crafts sold to tourists. By being allowed to harvest grass from the parks for two weeks during the year, communities have a resource for making reed products for local sale.

Populations of the several endangered species have increased as a result of better park management. The evaluation recorded successful recolonization of abandoned farmlands by prime riverine grasslands, a change that improved and increased the habitat for rhinos. The greater one-horned rhinoceros population in the Chitwan area in 1958 (before Chitwan became a national park) was estimated at 35. With clear demarcation of park boundaries and better control of poaching, the 1975 population stood at 176 rhinos. Thirteen years later it had increased by almost 50 percent. By the mid-1980s, the total rhino population in the park had increased to around 400. It now stands at 450. Similarly, the Bengal tiger came back from a population of 25 to a current population of between 70 and 100, the latter figure estimated to reflect the park's actual carrying capacity.

Effectiveness

Preliminary observations suggest greater cost-effectiveness of a participatory over an authoritarian approach to protection of biological diversity. Community antipoaching units around Chitwan National Park are one example. Traditional enforcement by army patrols is costly. It absorbs about 75 percent of the park's budget and is ineffective. Troops are given almost no specialized training in wildlife and habitat management or in pressing charges against encroachers. Moreover, their jurisdiction is strictly limited to the area within park boundaries not necessarily the area where poachers operate.

By contrast, the cost to the government of the antipoaching units is marginal, and the results (though still implemented only as a pilot program) are impressive. In the 3 years before the study, the units jailed 75 poachers. Rewards of 2,500 rupees (\$50) were typical. That amount is trivial when compared with the 50,000 rupees (\$1,000) fetched by a single kilogram of rhino horn or tiger bones in Asian markets.

Local communities have shared unevenly in the benefits and costs of setting up parks to protect biological diversity. Despite measures to involve local populations in the economic benefits the parks can bring, some villagers appear to have paid disproportionately in the process. When Chitwan Park was created, the government forcibly relocated some people. New prohibitions against livestock grazing and forest products collection have added to the hardships of local villagers. There have also been incidents of human injury and death, as well as crop and livestock loss, from protected large mammals.

Village interviews reveal that park benefits, particularly from tourism, are limited to wealthier settlers who have established businesses. For the most part, poorer settlers and most indigenous Tharu received little benefit from the park. Still, there are signs the local people may be beginning to appreciate the ecological role of the park in stabilizing agricultural lands. In particular, a long history of flooding of the Rapti River has convinced some people of the importance of park forests in flood control. However, continued illegal hunting, livestock grazing, and fuelwood collection suggest that Nepal's national park system has not yet provided effective alternative livelihood opportunities for some local villagers.

Sustainability and Replicability

Tourist spending offers a vehicle for developing financial and institutional sustainability. The 1993 amendment to the Wildlife Conservation Act provides for the distribution of from 30 percent to 50 percent of park revenues to surrounding communities. That is a major step toward increasing the financial stake of local communities in sustaining Chitwan park and the biological resources that can attract future visitors and generate income.

The Chitwan policy of controlled grass cutting is being replicated elsewhere in Nepal. The policy embodies the concept of integrated conservation and development, balancing protection against the subsistence needs of the local people. The initiative demonstrated both the benefits (for example, revenue sharing) and the perils (illicit wood cutting) of such programs. Although the specifics of such controlled use may change, the dynamics of people's interaction with a protected area has common threads. Thus grass collection at Chitwan serves as a valuable model for the interactions of local people in other protected areas of Nepal. Chitwan has established the value of scientific research to park planning and management. A solid scientific foundation for park management and species conservation programs grew out of early, detailed research programs. Early research on rhino ecology set a precedent for managing Nepal's endangered species scientifically, with decisions guided by population dynamics and sound baseline data. The research process has become replicable (facilities, trained core staff, and fund-raising capacity) in the emerging park model Chitwan represents.

Principles set by the rhino research are being applied to tiger studies and to address lesser known endangered species. The momentum of USAID-supported research has influenced the direction and quality of later work. It has helped Royal Chitwan National Park become one of Asia's most thoroughly studied, best understood parks.

Lessons Learned

Strict protectionist measures directed from the muzzle of a gun do not help conserve biologically rich areas on which local people depend. Authoritarian controls over protected-area access set the stage for conflict and eventual environmental degradation. More

effective are approaches that use people's needs to reinforce efforts to protect park resources. The 1993 amendment to the National Wildlife Act embodies both. On the one hand, it provides park revenue and resource sharing with local communities; on the other, it engages the same beneficiaries in patrolling against park abuses.

Understanding the status and management requirements of endangered species inside and outside park areas is critical to sustainable protection of biological resources. USAID-funded research points to the critical links between species survival and habitat both inside and outside a park. The role of corridors, forest fragments, rangelands, and other cultural landscapes as a complement to protected areas themselves should not be underestimated. It appears insufficient to conserve plant and animal species only within protected areas. However, within a general framework of land-use planning and management, protected areas play a vital role in conserving the country's biodiversity.

Umbrella grants to NGOs can be a highly effective means of funding initiatives in biodiversity conservation. USAID funds to local NGOs can result in a range of effective initiatives directed at biological conservation. In Nepal's Royal Chitwan National Park region, USAID's training start-up grants leveraged additional support from other funding sources. At the policy level, USAID funds to a local NGO played a pivotal role in the adoption of buffer zone legislation and revenue sharing. Local NGO lobbying efforts also proved more effective than similar efforts by international conservation organizations in preventing construction of a dam that would have damaged Chitwan's riverine habitat. Local NGOs can empower local participation in the democratic process, whereas international lobbying (which often bypasses local individuals) can have the opposite effect.

This Evaluation Highlights summarizes the findings of CDIE Working Paper, "Protecting Biological Diversity: Nepal Case Study," (forthcoming) by Fred Sowers, Mark Walters, and Biswa Nath Upret. The study is part of a six-country assessment, directed by Phillip Church, of USAID's biological diversity protection programs. Readers can order copies of CDIE reports from the DISC, 1611 North Kent Street, Suite 200, Arlington, VA 22209-200, telephone (703) 351-4006; fax (703) 351-4039.